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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P200301028WO	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/DK 03/00452	International filing date *(day/month/year)* 30.06.2003	Priority date *(day/month/year)* 28.06.2002
International Patent Classification (IPC) or both national classification and IPC A61K35/78		
Applicant OLE KAAE HANSEN HOLDING APS et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
11.12.2003	21.10.2004
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Thalmair, M Telephone No. +49 89 2399-2177

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK 03/00452

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-15 as originally filed

Claims, Numbers

1-20 received on 23.07.2004 with letter of 19.07.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-20
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-20
Industrial applicability (IA)	Yes:	Claims	1-20
	No:	Claims	

2. Citations and explanations

see separate sheet

Section V

With reference to the Second Written Opinion dated 29 April 2004, Applicant has filed a set of amended claims 1-20 in which the term "pH>7" has been added to claim 1. This amendment has basis on page 6, lines 15-16 of the description. However, as it was already indicated in step (ii) of claim 1 that incubating the mixture formed in step (i) is to be carried out under alkaline conditions, the additon of the term "pH>7" merely is of a cosmetic nature and does not add any new technical feature to this claim. Hence, actually present claim 1 does not differ from claim 1 as received on 20.04.04 (with letter dated 20.04.04).

With respect to the argumentation provided by Applicant concerning an inventive step over **D 1** (Thaire Lalitha et al., 1987) and/or **D 2** (K.R. Price et al., 1987) alone or in combination with **D 5** (Ajay Singh & I.S. Singh, 1991), the following comments are made.

Applicant has acknowledged that monodesmosidic saponins are extracted most efficiently with water according to **D 2**. Present claim 1, however, covers the preparation of an aqueous extract comprising saponins in general including monodesmosidic saponins as well.

With regard to **D 1**, Applicant's view that water extraction has not been employed cannot be shared, since Table IV explicitly refers to aqueous *Madhuca butyracea* saponin containing extracts.

Concerning **D 5**, Applicant has acknowledged that this reference discloses an extraction method that shares some of the features as presently claimed. Applicant argues that D 5 would not relate to a saponin extraction method but to a protein extraction method. It is respectfully disagreed with this view of the Applicant, since - as already pointed out in the two preceding written opinions - D 5 already reports on an extraction procedure by suspending 2 g of defatted mahua meal in 20 ml distilled water followed by adjusting the pH (2-10) by 2N Hcl or 2N NaOH. The suspension was stirred for 1 h and then centrifuged (5000 rpm) for 20 min at 4° (see page 223, second paragraph and Table 3 on the lower part of page 225). The resulting extract according to D 5 contains (beside proteins) also saponins, see pages 226-227. Several uses of the extracts of D 5 e.g. for making alcoholic beverages, for edible purposes, in cosmetic and pharmaceutical industries are mentioned on page 227 of D 5.

Moreover, as already indicated in the First Written Opinion (dated 30.01.04), **D 4** (GB-A-1510790) shows a method of detoxifying nutrient plant material having a content of toxic saponins such as defatted mowrah meal (from the defatted seeds of *Madhuca latifolia*, syn. *M. indica*, *Bassia latifolia*, family *Sapotaceae*), in which the material is treated with a hydrolysing agent (e.g. an acid) under conditions such as to bring about hydrolysis of the saponins to sapogenins, c.f. present claims 10-12.

Further preparation steps such as concentration and/or purification by evaporation of water

and/or ultrafiltration and/or recrystallisation as mentioned in claim 8 of the present application, are certainly techniques which are well-known to the skilled person, and therefore not suited to establish an inventive step, c.f. **D 6** (C. Pompei et al. 1974) which reports on purification experiments carried out on aqueous soybean protein extracts (obtained from defatted flakes) through a combined process of ultrafiltration and diafiltration.

Hence, to sum up, for the reasons as specified the presently claimed subject-matter is not considered as involving inventive merits.

Amended Claims

1. A method of preparing an aqueous extract comprising saponins on basis of waste product from a shea butter tree, said method comprising the following steps:
(i) mixing one part waste product with 4-30 parts of water;
(ii) incubating the mixture formed in step (i) under alkaline conditions (pH>7); and
(iii) recovering an aqueous extract comprising saponins by removing solids from the alkaline mixture formed in step (ii).

2. A method according to claim 1, wherein the alkaline conditions are obtained by addition of an alkali in the form of a base and/or an alkaline buffer.

3. A method according to claim 2, wherein the alkali is selected from the group consisting of: potassium-, sodium-, calcium-, ammonium-hydroxide or potassium-, sodium-, calcium-, ammonium-, hydroxide carbonate.

4. A method according to any of claims 1-3, wherein the incubation in step (ii) is performed at a pH of 7-14, preferably 7-10.

5. A method according to any of claims 1-4, wherein the incubation step (ii) is performed at a temperature of between 15 and 95 °C at a period of between 10 minutes and 5 hours.

6. A method according to any of claims 1-5, wherein solids are removed from the extract in step (iii) by filtration or centrifugation.

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7. A method according to any of claims 1-6 yielding an extract containing at least 1 weight-% dry matter.

8. A method according to any of claims 1-7, wherein the extract obtained in step (iii) is further concentrated and/or purified by evaporation of water and/or ultrafiltration and/or recrystallisation.

9. A butter tree extract obtainable by the method of any of claims 1-8.

10. A method of producing an aqueous extract enriched with sapogenins comprising the step of subjecting a saponin containing extract of claim 9 to enzymatic or acid hydrolysis, and thereby obtaining an extract enriched with sapogenins.

11. A sapogenin enriched extract obtainable by the method of claim 10.

12. An extract of claim 9 or 11, wherein the active compounds are chemically modified to increase their solubility in oil.

13. Use of an extract of any of claims 9, 11, or 12 as a food additive.

14. Use of an extract of any of claims 9, 11, or 12 in the manufacture of a detergent product.

15. Use of an extract of any of claims 9, 11, or 12 in the manufacture of a cosmetic product.

16. Use of an extract of any of claims 9, 11, or 12 in the manufacture of a pharmaceutical product for topical application.

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17. Use of an extract of any of claims 9, 11, or 12 in the manufacture of a pharmaceutical product for lowering the level of serum cholesterol in a human being or in other mammals.

18. Use of an extract of any of claims 9, 11, or 12 in the manufacture of a pharmaceutical product for treatment of inflammatory diseases.

19. Use of an extract of any of claims 9, 11, or 12 in the manufacture of a pharmaceutical product for systemic administration.

20. Use of an extract of any of claims 9, 11, or 12 in the manufacture of a nutritional supplement.